1895.

ANNUAL REPORT

OF THE

Medical Officer of Health

FOR THE

BOROUGH OF MAIDSTONE.

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1896.

Borough of Maidstone.

REPORT OF THE MEDICAL OFFICER OF HEALTH,

FOR THE YEAR 1895.

TO THE LOCAL BOARD.

MR. MAYOR AND GENTLEMEN,

On the assumption that the rate of increase to the population since the last census has been equal to what it was ascertained to have been during the preceding decennium, calculated to the middle of the the year 1895, the population of Maidstone must have been as follows:—

East Maidstone	17,051
West „	16,231
	33,282

These figures constitute the basis of the calculations which follow in this Report upon the Sanitary affairs of the Borough for the year 1895, which I have the honour herewith to present you.

From out of this population there were registered

Of Births	830
Of Deaths	456
Showing an excess of Births over Deaths of	374

constituting the natural increment to the population.

The number of persons married was 508, so the rates per annum per thousand of population were:—

Of Births	24·93
,, Deaths	13·69
,, Marriages	15·26

BIRTHS.—In East Maidstone the Births numbered 428 = 25·09 per thousand; in West Maidstone 402 = 24·76 per thousand; 2·10 per cent. of those in East, and 4·97 per cent. of those in West, were illegitimate, against a mean for Kent of 3·9, and for all England of 4·2.

With two exceptions, one for the year 1890 when the rate was 24·59, and 1893 when it was 24·15, the Birth rate for 1895 was the lowest yet recorded for Maidstone, and is far below the general mean rate for England and Wales, which is 30·3 per thousand.

DEATHS.—In East Maidstone there were 248 Deaths = 14·54 per thousand; and in West Maidstone 208 = 12·81 per thousand; the mean for England and Wales for the same time being 18·7.

Allowing for the "*Age and Sex Constitution*" of our population (got by multiplying by the factor 1·024)* our "Comparative Mean Death Rate" stands at 14·98 per thousand, and our "Comparative Mortality Figure" = 854, that is to say the loss by death in an equal number of persons, in all respects comparable as to age and sex, was 854 in Maidstone, as against 1,000 in England and Wales at large; this figure, altogether so remarkable and satisfactory, is pregnant with meaning, and deserves thoroughly looking into. I shall deal with this subject fully later on in this Report.

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* For an explanation of the method and application of this correction, see Annual Report for 1893, pages 5—9.

The Average Age at time of Death.

1895.	East.	West.	Whole Borough.
1st Quarter	38·77	44·49	41·21
2nd ,, ...	46·55	40·05	43·75
3rd ,, ...	23·19	29·23	26·08
4th ,, ...	38·39	31·80	35·12
Whole Year	37·20	36·66	36·95
Average for past 17 years	33·06	33·54	33·22

From this table it is seen that for the year as a whole the mean age at death was 36·95 years, which exceeds the mean for the previous 17 years (33·22) by no less than 3·73 years, = 12 per cent. The reasons for this were various, but the main causes were the few deaths, comparatively speaking, among young children, more especially during the second quarter, and the excessive mortality among the very aged during, and caused by, the ten weeks bitter cold of the first quarter.

The General Infant Mortality under one year was at the rate of 129 deaths per thousand of births, against 161 in England and Wales for the same period. (See Table on page 4.)

Compared with our own averages, this mortality was below the mean for the first two quarters, but in excess of the mean for the third and fourth. It is interesting to note that the very severe weather at the early part of the year had no commensurate fatal effect upon infant life; so far as my observations go, in the absence of Measles and Whooping Cough, infant children get through severe cold very well, no doubt by reason of the maternal solicitude. On the other hand there can be no mistake about the fatal effect of severe cold upon the aged; for further details as to this and other points relating to age incidence I must refer to Table II in the appendix.

Deaths per 1,000 Births of Children under one year in Maidstone.

Year.	1st. Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.	Whole Year.
1870	165	97	263	115	160
1871	258	107	278	117	190
1872	181	116	171	144	153
1873	136	118	246	127	157
1874	182	93	261	119	164
1875	187	106	157	165	154
1876	147	112	141	98	124
1877	211	140	187	84	155
1878	161	176	209	155	175
1879	135	145	122	165	142
Average.	176·3	121·0	203·5	128·9	157·4
1880	135	120	229	118	153
1881	120	119	122	64	106
1882	138	110	100	151	125
1883	218	79	122	139	138
1884	189	78	159	125	138
1885	140	75	187	139	133
1886	118	105	191	166	142
1887	80	59	158	114	103
1888	167	136	167	145	154
1889	132	99	173	137	135
Average.	143·7	98·0	160·8	129·8	132·7
1890	136	117	93	113	115
1891	140	113	150	157	140
1892	128	87	110	80	102
1893	64	90	222	80	111
1894	167	119	112	116	128
1895	133	62	172	157	129

In Table III are given the usual particulars respecting the assigned Causes of Death, as distributed among 10 various classes of disease.

Without exception the deaths from Zymotic disease were fewer than during any other year within record, the whole number attributed to one or other of the seven chief Zymotics being only 14, = 0·42 per thousand of population; 9 of these, = ·52 per thousand occuring in East Maidstone, and 5 = ·30 in West

Maidstone; the corresponding rate for England and Wales was 2·13.

SMALL POX.—Of this disease we had none whatever. A case was notified as "doubtful Small Pox," happily it proved to be a false alarm.

MEASLES.—The habit of this disorder is to exhibit an excess of prevalence every second or third year, and the longer the interval the more severe the next subsequent prevalence usually is. The disease is intensely contagious, and in great part owing to complications arising from lung diseases, not unfrequently excessively fatal, the mortality falling most severely upon young children under two years; 75 per cent. of the whole of the fatal cases being under 3 years, and 95 per cent. under 5 years. It has a period of incubation, or latency, of about a fortnight, and the initial symptoms of the attack are in no way distinguishable from the symptons of an ordinary cold; but even at this stage, for perhaps a week before the development of the rash, it is highly contagious. As with most other diseases of its kind, one attack generally protects against a second for the rest of life; contrary to the usual rule in similar infectious disorders, as a whole there appears to be an increased rather than decreased tendency for the prevalence of this disease, a fact in all probability due to the enlarged facilities for contagion resulting from compulsory elementary school attendance. On these various accounts it is not surprising that Measles is one of the most unmanageable diseases Sanitarians have to deal with; for all practical purposes in early life everybody is susceptible to it, and there is little chance of escape from exposure in one way or another to the infection, and so far as an invaded family is concerned, there is no possibility of preventing its spread from one individual member to the rest, for after the invasion, and long before the least suspicion of its presence may have arisen, every susceptible member of the invaded family has in all probability been unwittingly and abundantly exposed to the infection. The same remark applies, with hardly less force, to Schools, more especially Infant Schools.

Because of the extensive epidemic of Measles now prevailing, I will relate the history of this disease in Maidstone, so far as my own experience goes.

The Mortality in Maidstone from Measles, 1879-95.

Quarter	1879	1880	1881	1882	1883	1884	1885	1886	1887	1888	1889	1890	1891	1892	1893	1894	1895	Total.	Mean.
1st		5			16			9	1		8		1	7				47	2·8
2nd		4		1	4	1		2			13			2				27	1·6
3rd	1		2	4		3		3			2		1		1			17	1·0
4th			2	5		2	1			1			17		1		3	30	1·8
Whole Year.	1	9	4	10	20	6	1	14	1	1	23	0	19	9	2	0	3	121	7·2

From this Table it may be seen that for the space of 45 months, from the end of the first quarter of the year 1892 to December 1895, Maidstone had been unusually free from fatal Measles, only four deaths having been registered as due to this cause, consequently our population had become highly susceptive to the infection, so that it is not surprising that when the disease did come it grew apace, and soon became widely epidemic throughout the St. Michael's parish. So far as the year under review is concerned, there were registered three deaths only from Measles, and these three occurred during the last two weeks of the year; the chief brunt of the fatality was carried over to the present year, 1896. Beginning in St. Peter's parish, without doubt the epidemic was spread chiefly through the agency of the Infant Department of the Bower Lane Elementary Schools, and before its occurence became known to us, the extension of the disorder into St. Michael's parish had reached unmanageable proportions, so far as any hope of stamping it out was concerned, all that remained possible to be done was to restrain its spread beyond the parishes where it had already become epidemic by closing the elementary Schools, more especially in the other parishes, against the admission of children under seven. This measure, I am glad to say, certainly appears to have had a beneficial effect. The rationale of this course of action rests upon the consideration that there must be two factors concerned in the spread of this or a like disorder—the *Seed* and the *Soil*—either one of the two factors without the other is necessarily impotent. It is therefore our business, as far as possible, to keep these two factors asunder. As has already been pointed out, the soil for Measles is almost entirely confined to children under five years, such children assembled in Schools afford an unfailing and irresistible bait to an invasion, consequently the only hopeful chance of moderating an epidemic that has reached the stage that ours had reached is to be sought through the segregation of the children within their respective homes by the closure of Infant Schools. If this could have been done at the outset, when the very first few cases occurred, and the word passed round for all young children, say under seven years of age, to be kept within doors for the space of a couple of weeks, there is good ground for the belief that the spread of this serious disorder might have been brought under effectual control. But as we all know there is little or no chance of gaining sufficiently early information to enable this to be brought to pass, in the general way parents are calmly indifferent, looking upon Measles as a necessary and inevitable evil, whilst School Masters and Mistresses having their own proper business affairs to think about, and moreover being chiefly concerned only in the maintenance of the average attendances of their pupils, overlook or even disregard the all important *first* case, and only awake to the consequence of an outbreak when, as in the present instance, the first case has so multiplied itself as to affect seriously their average attendances, and by the time that stage is reached there is no longer a chance of doing much in restraint of a general epidemic, the train having been laid an explosion is bound to occur. This, it must be confessed, is but an impotent conclusion; be that as it may, it is the truth, and it is best the truth should be known; knowledge of these matters, if it can do nothing else, by education may in time bring the public to a more intelligent and correct sense of the duties resting upon them in regard to their conduct for the protection of their own and other people's children against infection.

As respects any hoped for advantage that might be expected would follow upon notification and Hospital isolation of Measles, my opinion is that notification can never be made early enough to prevent the spread of *this* disease by contagion before it is possible to diagnose its existence, and moreover, unless notification be followed up by *compulsory* Hospital isolation, notification alone would be of little or no service, and further, to meet the isolation requirements of Measles, Hospital accommodation would have to be enormously increased at a most burdensome outlay; and I very much doubt, having regard to the tender years of the patients, whether it would be practicable to deal with the infant sufferers apart from their parents.

SCARLET FEVER was notified in 70 cases; 35 being located in the East, and 35 in West Maidstone. It was in greater prevalence during the beginning of the year in the East, and at the end of the year in the West, but uniformly of a very mild type, in no instance resulting in death.

DIPHTHERIA was notified in 67 instances, and Membraneous Croup in 5; of these 47 were located in East and 25 in West Maidstone, only 9, = 12·3 per cent., proved to be fatal, showing the disease to have been of a mild description. The observed movements of the ground water were in agreement with these facts both as regards the dates of the occurrence of Diphtheria and the quality of the disorder. In no instance was there reason to suspect School attendance or Milk supply to have been concerned in its propagation, neither did the cases exhibit any tendency to special localization. In at least two instances the infection was imported, and in a few cases it spread to a second and in one case to a third member of the same family.

WHOOPING COUGH.—Maidstone was practically free from this disease.

TYPHOID FEVER was notified 21 times, but as in 3 instances there was dual notification the actual number of individual cases is reduced to 18. Eleven of these were located in East and 7 in West Maidstone; this is about an average number. One was imported from East Malling, another from Chelmsford, a third from Warwick, a fourth and fifth were contracted by the drinking of foul water at Detling and Bearsted respectively, and a sixth by eating oysters at Southend; the facts connected with this latter case are sufficiently interesting to deserve detailed record. In August I was notified of a case of Typhoid in Union Street, the sufferer was a woman aged 56; there was no ostensible reason for the disorder in Union Street, where she resided, and after careful study of the case I could come to no other conclusion than that she had contracted the disorder from a patient she had recently been nursing in Victoria Street; up to this time it had not been suspected that the Victoria Street patient had been ill of Typhoid, but so it proved, and enquiry into her case led to the following history.

The Victoria Street patient and her daughter Edith, along with Miss S. and a Mr. and Mrs. W., went for a day to Southend on June 27th; for their refreshment they took with them ham sandwiches, whisky and water, and biscuits, of which they all partook, and had nothing else to eat or drink until Southend was reached; there, at a Temperance Hotel they all drank lemonade, and *the patient*, *but she alone*, ate oysters at a Tea Garden. Later on they all had tea together, and some of the party drank cold water, but the patient did not; subsequently they all had tea and shrimps at the Temperance Hotel, and coming home by the boat wound up with lemonade and sweets. The only articles of food and drink not partaken of in common by the whole party were the raw water which the patient did not drink, but all the others did, and the oysters which she partook of, but they did not.

When these and other facts came to be sifted out, along with the dates and particulars of her subsequent illness, they tallied exactly with the assumption that the disorder she had suffered from was none other than Typhoid, for which she had been nursed by the woman in Union Street to whom reference was first made, and to whom she had communicated the infection of Typhoid. To clinch the diagnosis in her own case, it subsequently came to pass that upon the departure of the infected nurse, the patient's own daughter having taken up the nursing of her mother, she, the daughter herself fell a second victim of the infection, and passed through a characteristic attack of Typhoid. Reflecting upon the history of a case that occurred in Lower Fant some years back, I have strong reason for believing the above recited case is not the first instance of Typhoid occurring in Maidstone that can be traced to the eating of infected oysters at Southend.

Seven out of the ten remaining cases were of more prosaic origin, more or less serious faults of drainage being discovered in association with them; one of the remaining three was of doubtful nature, and two occurring in young children, from whom it was impossible to obtain reliable histories, remain unexplained. As samples of the faults of house drainage that resulted in typhoid, the following are illustrations:—A modern house in Albion Place, with drainage passing from back to front directly under the most frequently occupied living room, was found to have its earthenware drainpipes laid dry, with consequent escape and accumulation of sewage at each open joint; similar conditions prevailed in old houses in Brewer Street and

King Street. In another case sewer air was laid on to the house by way of an open untrapped grid under sink in basement, directly connected with main sewer. It is only to be expected in an old town like Maidstone that these and similar drainage faults must turn up now and again; they are relics of past ignorance and mismanagement that are not likely, I should hope, to be repeated now or in the future.

DIARRHŒA.—As regards England and Wales as a whole the mortality was exceptionally heavy from this cause, and reached the high figure of 2·36 per thousand. The deaths in Maidstone were 14, = 0·42 per thousand, relatively a very low record, but compared with Maidstone herself, above the average as 14 are more than 12·5. As I have often had occasion to point out, Summer Diarrhœa is the co-ordinate of the climate, and this excess of Diarrhœa was entirely due to the excessive heat that prevailed during August and September.

PHTHISIS.—41 deaths, = 1·14 per thousand, were due to Pulmonary Consumption, against a general average for all England of 1·63. Except for the year 1881, when the rate was 1·11, and 1892, when it was 1·04, this is our lowest record, our own average being 1·39.

INFLUENZA as a fatal disorder has disappeared.

The mortality from other classes of disease is set forth in extenso in Table III, the substance of which for the convenience of ready reference and comparison is given in the following summary:—

Causes of Death.—Rate per 1,000.

Disease.	East Maidstone.		West Maidstone.		Whole Borough.	
	1895.	average 17 years	1895.	average 17 years	1895.	17 years average
Seven Zymotic Diseases	·52	1·846	·30	1·345	·42	1·575
Other Zymotics	·64	·337	..	·252	·16	·292
Phthisis	1·58	1·404	·92	1·177	1·26	1·294
Other Constitutional Diseases..	1·11	1·540	1·17	1·242	1·14	1·398
Disease of the Respiratory Organs	3·10	3·636	2·27	2·603	2·70	3·121
Diseases of the Organs of Circulation	1·17	1·385	1·35	1·098	1·26	1·270
Other Local Diseases	3·40	3·410	3·57	2·934	3·48	3·170
Developmental Diseases	1·58	2·168	·92	1·791	1·26	1·985
Deaths by Violence	·35	·56	·86	·57	·60	·56
Causes ill-defined or not specified	1·05	1·08	·73	·85	·90	·97

With two trifling exceptions this Table shows a a reduction upon the average mortality in every category.

For your further information the following Table is given, in order that a comparison may be made between Maidstone and England and Wales as a whole, or Urban or Rural England separately, in respects to deaths from Zymotic disease.

Comparative Table of Zymotic Deaths per 1,000.

Locality.	All Causes.	Seven Zymotics.	Small Pox.	Measles.	Scarlet Fever.	Diphtheria.	Whooping Cough.	Fever.	Diarrhœa.
EAST MAIDSTONE..	15·91	·52	..	·06	..	·35	..	·12	·59
WEST ,, ..	14·01	·30	..	·12	..	·19	..	..	·62
WHOLE BORO'	14·98	1·02	..	·09	..	·27	..	·06	·60
England and Wales	18·7	2·14	·03	·37	·15	·25	·30	·17	·88
33 Great Towns ..	20·6	2·84	·03	·53	·18	·35	·39	·20	1·19
67 Large Towns ..	18·8	2·41	·03	·37	·15	·23	·31	·21	1·12
England and Wales Rural	17·5	1·61	·03	·26	·12	·19	·25	·15	·63

The Notification Act.—The following is a summary of all the Notifications received in the year 1895, and also during the five years—1891 to 1895—that the act has been in force:—

Disease.	1895.	5 Years average 1891-1895.
Diphtheria	67	90·8
Croup	5	
Scarlet Fever	70	107·8
Typhoid Fever	21	20·0
Continued Fever	0	
Erysipelas	17	34·0
Puerperal Fever	2	4·4
Small Pox	1 ?	6·6

DIPHTHERIA AND CROUP.

Quarter.	1890.	1891.	1892.	1893.	1894.	1895.	Average.
1st	*	12	36	16	28	18	22·0
2nd	*	3	27	53	14	8	21·0
3rd	*	5	15	48	17	16	20·2
4th	17	13	28	46	13	30	24·5
Year		33	106	163	72	72	89·2

SCARLET FEVER.

Quarter.	1890.	1891.	1892.	1893.	1894.	1895.	Average.
1st	*	7	..	30	37	19	18·6
2nd	*	4	4	90	18	9	25·0
3rd	*	4	15	79	27	13	27·6
4th	6	5	25	107	17	29	31·5
Year		20	44	306	99	70	107·8

* Notification Act not then in force.

TYPHOID AND CONTINUED FEVER.

Quarter.	1890.	1891.	1892.	1893.	1894.	1895.	Average.
1st	*	4	2	4	5	5	4·0
2nd	*	2	3	10	3	5	4·6
3rd......	*	2	3	11	2	5	4·6
4th......	14	9	8	9	2	6	8·0
Year		17	16	34	12	21	20·0

ERYSIPELAS.

Quarter.	1890.	1891.	1892.	1893.	1894.	1895.	Average.
1st	*	8	12	14	13	2	9·8
2nd	*	5	6	13	5	2	6·2
3rd......	*	8	7	15	4	7	8·2
4th......	3	4	12	18	9	6	8·7
Year		25	37	60	31	17	34·0

PUERPERAL FEVER.

Quarter.	1890.	1891.	1892.	1893.	1894.	1895.	Average.
1st	*	1	3	2	3	1	2·0
2nd	*	..	1	2	2	..	1·0
3rd......	*	1	..	3	..	..	·8
4th......	1	..	..	2	..	1	·6
Year		2	4	9	5	2	4·4

SMALL POX.

Quarter.	1890.	1891.	1892.	1893.	1894.	1895.	Average.
1st	*	1	..	1	20	..	4·4
2nd	*	..	..	..	4	..	·8
3rd......	*	..	..	..	4	..	·8
4th......	..	..	..	1	1	..	·4
Year		1	..	2	29	..	6·4

* Notification Act not yet in force.

TOTAL ZYMOTICS.

Quarter.	1890.	1891.	1892.	1893.	1894.	1895.	Average.
1st......	*	33	53	66	106	45	60·6
2nd	*	14	41	168	46	25	58·8
3rd......	*	20	40	156	54	41	62·2
4th......	41	31	73	183	42	72	73·6
Year		98	207	573	248	183	261·8

* Notification Act not yet in force.

So that 1895 was free from Notifiable Zymotic Diseases to an extent much below the average of the other years that the Notification has been in force.

THE PUBLIC HOSPITAL.—The total of admissions during the year 1895 was 74, and comprise the following cases:—

Scarlet Fever..................	47
Diphtheria	25
Typhoid Fever	1
Small Pox (spurious)	1
	74

The deaths in the Hospital were two, = a mortality among the Hospital Patients of 2·7 per cent. only.

The Table on next page gives the number of day's rations for the Patients and Staff, and the cost thereof.

The average length of stay for each patient in the Hospital was 40·9 days, and the cost for maintenance £2 1s. 2½d., or about a shilling a day, to which should be added the Staff maintenance, which raises the total cost per patient to £3 10s. 2½d., or 15¼d. per diem. This is a reduction of 8·6 days of the duration of residence of each patient at the Hospital, and of 5s. 2½d. in the cost of maintenance, as compared with 1894.

1895.	Staff.				Patients.			
Month.	No. of Days.	Cost. £	s.	d.	No. of Days.	Cost. £	s.	d.
January	155	9	2	4·6	93	5	0	9·6
February	140	8	4	8·8	205	10	1	5·5
March	155	9	2	4·6	246	11	8	9·2
April	150	8	16	6	226	10	15	6
May	155	9	2	4·6	132	9	3	0·6
June	150	8	16	6	129	6	11	11·8
July	155	9	2	4·6	279	14	16	3·9
August	155	9	2	4·6	241	11	12	10·9
September	150	8	16	6	296	13	18	10·4
October	155	9	2	4·6	357	18	0	2·7
November	150	8	16	6	378	19	2	9·3
December	155	9	2	4·6	445	21	17	8
Total	1825	£107	7	5	3027	£152	10	3·9

DISINFECTION STATION.—2,079 articles of clothing or furniture were removed from infected houses, disinfected, and returned to their respective owners free of charge.

METEOROLOGY.

TEMPERATURE AND RAINFALL.

RAINFALL.—The Rainfall for Maidstone for the year 1895 was 22·24 inches, with five exceptions the lowest record since 1870. In 1870 it was 19·56, in 1884 19·58, in 1888 21·39, in 1873 21·5, and in 1887 21·73; the average of 46 years being 25·58. May, June, and September were remarkably dry months, only 0·05, 0·10, and 0·61 parts of an inch of rain falling in each respectively; on the other hand November, with 5·11 inches, was unusually wet, and July, August, and December had excess of rain to a small amount. The greatest rainfalls of the year took place during the 45th, 41st, 51st, and 46th weeks, when the amounts registered were 2·16, 1·79, 1·65, and 1·63 inches respectively.

TEMPERATURE.—As a whole the year was a warm one, but only the 6/10th of a degree, 0·6°, above the average. The first quarter was very cold, with an average of 4·6° below the mean, the second and third quarters were each 2·2° above, and the fourth quarter was also 0·8° above. The greatest amount of heat was registered on September 25th and 28th, when the shade temperature amounted to 84°, and the greatest cold on February 7th, when the thermometer stood at 8°.

THE WINDS.—The departure from the average in excess or deficiency as compared with former years, in days:—

Year.	NW	N	NE	E	SE	S	SW	W
1895	−7·0	+1·75	+8·0	+5·25	−4·0	+2·5	−3·5	−7·75

By far the greatest deviation from the average of former years was in favour of NE and Easterly winds. There was a slight excess of N wind, and a considerable excess of S wind. Westerly, and after that North Westerly, South East, and South Westerly were in greatest deficiency.

HUMIDITY.—As might be anticipated, with such strongly marked deficiency of Westerly and South Westerly winds, the atmosphere was for the most part throughout the year unusually dry. In February, May, and June particularly so; March and April were the only exceptions. The mean humidity for the year as a whole was 78 per cent. of absolute saturation, which is 4·5 per cent. drier than the mean of the past 54 years.

Month.	Mean for 1895.	Mean for 54 years.	Difference for 1895.
January	86	87	−1
February	74	85	−11
March	83	81	+2
April	82	80	+2
May	67	78	−11
June	63	75	−12
July	68	76	−8
August	76	77	−1
September	75	81	−6
October	85	89	−4
November	88	91	−3
December	88	99	−1
Mean	78	82·4	−4·5

SUBSOIL WATER.—The mean height of the Subsoil Water was 194·06 inches below the level of the ground surface at my laboratory, the mean level for the last eleven years being 197·64, so that the water stood at an average of 3·58 inches higher than usual. The highest point to which it rose was to within 186·00 of the surface, and the lowest point to which it sank was 201·24, consequently giving a range of movement during the year of 15·24 inches. The average yearly range has been 18·40. Apparently this would therefore indicate less movement and consequently less cleansing of the soil than usual, but the truth of the case is hardly in accordance with this assumption; the fact being that at the end of 1894, for the last five weeks of the year, there had been a most rapid descent of the subsoil water, from the highest point to which I have ever known it reach, namely, to within 176·88 inches of the surface; so that if we include the last five weeks of the year 1894 with the record for 1895, we have a range of movement = 24·36 inches instead of 15·24, which alters the case entirely and shows that in point of fact the purging and aëration of the soil was unusually well effected during the year, and according to my views in the matter, we have full evidence that this cleansing of the soil did really take place, in the attenuated quality of the Diphtheria.

Subsoil Water Levels.

Year.	Average for Year.	Highest.	Lowest.	Range.
1885	201·52	187·92	212·40	24·48
1886	202·81	188·64	211·68	23·04
1887	200·07	186·72	208·56	21·84
1888	198·50	189·84	203·28	13·44
1889	198·18	193·68	204·00	10·32
1890	199·23	192·24	206·52	14·28
1891	196·18	188·28	201·60	13·32
1892	195·76	182·16	204·00	21·84
1893	193·96	181·20	203·76	22·56
1894	193·89	176·88	198·96	22·08
1895	194·06	186·00	201·24	15·24

In inches beneath the surface at the Laboratory.

GENERAL SANITARY CONDITION AND PROGRESS.

From Mr. Bunting, the Borough Surveyor, I learn that the following works of Sanitary interest have been carried out during the year 1895:—

"61 New Houses erected.

"32 Houses and Buildings undergone alterations and additions.

" 1 New Street formed (St. Luke's Road).

"22 New Buildings of Factory and Public Buildings class built.

" 7 Stables, &c., and alterations to same.

" 3 New W.C.'s.

"55 Connections to Main Sewers.

" 2 Shafts have been erected at the heads of public sewers, and the manhole openings blocked on account of complaints of stench arising therefrom.

" New manholes have been constructed on various lines of sewers, for obtaining better access to them for cleansing and flushing purposes.

" Defective gullies, mostly untrapped, have been removed, and substituted with either brick or earthenware trapped and properly constructed ones.

" During the year a length of no less than 3,452 feet of new sewer has been laid in various parts of the town; a considerable amount of work for that time. Of the total, 2,332 feet was extension of our system, and 1,120 feet was the re-construction of old sewers, and work which was forced upon us by the fact that the old sewers in each case had lasted till they actually would not work any longer, and were a source of great danger to the public health; and moreover a considerable amount of similar work is necessary at the present time. The following list shows the locality in which the work has been carried out:—

Name of Street or Road.	Feet.	Diameter of Sewer.
Arundel Street	430	9 inch.
Bower Mount Road	97	9 ,,
Buckland Road	628	12 ,,
Oakwood Road	1007	9 ,,
Station Road	690	9 ,,
Tonbridge Road	600	9 ,,

" New manholes when constructed are now provided with a proper flushing valve and chain, in order that the sewers may be more effectually flushed

> by its being done in short lengths from manhole to manhole in sections, instead of in long lengths as at present. In the old way the water becomes more distributed as it passes down and loses its power of removing obstacles and cleansing so much of the interior surface of the sewer as by flushing in short lengths."

Some idea may be got from the above of the Sanitary improvements that are going on upon public property, besides which a large amount is continually in progress upon private, especially cottage property, at the cost of individual owners; evidence of this may be found by reference to the Sanitary Inspector's Reports past and present, as the following few items testify:—

Improvements.	1890	1891	1892	1893	1894	1895
New and re-organised Dust Bins	156	177	460	250	230	78
Back Yards of Dwelling Houses, &c., paved in concrete	48	68	135	101	149	95
Houses supplied with new and additional Water Closets	22	127	91	10	108	81
Water Closets supplied with Flushing Apparatus	..	..	..	164	160	187

It is a good thing for the town that the last item is beginning to make a fair show; the cure, and indeed the only possible cure for the much complained of stinking street ventilators, is universal and abundant, or rather I should say effectual flushing (for there is a lot of water wasted ineffectually) of every water closet and tributary house drain; when this becomes a rigorously enforced law the evil complained of will completely disappear. As I have repeatedly pointed out, *fresh* sewage does not stink, and if it is sent forthwith from the house through the house drains along the public sewer to its destination at the sewage works whilst in its fresh condition it never can give rise to offence; it is only when, by neglect of adequate flushing, solid refuse matter remains *in the house drains*, not the common sewer, and there lies until it becomes *stale*, and subsequently during the transport of this vile stuff, which of course eventually takes place, a nuisance arises at every ventilator along the line of sewer that this stinking stuff has to traverse, and in this way a single offender in respect of mis-managed house drains, may and does inflict an abominable nuisance upon the whole community. Surely if the enormity of this offence were properly realized, its occurrence would excite public resentment against the real offender instead of against the sewer, which is in the position of sufferer and not offender.

An instance of improvement of cottage property on a larger scale than usual deserves special mention. I allude to the whole of the cottage property on either side of James Street, and the contiguous houses in Wheeler Street, something like 52 houses altogether, all belonging as I understand to one and the same owner. These, as you may remember, were about as bad specimens of this description of property as could be seen anywhere in the Borough; but they have, in the course of the past year, been completely re-drained and furnished with "tipper closets" throughout, making a grand improvement. The owner deserves well of his tenants, and indeed, for the above mentioned reasons, of the whole of the community. There is an excellent illustration in Sharp's Yard, King Street, of hand-flushed and tank-flushed closets, in juxtaposition, affording a striking contrast of the two kinds of closets under precisely similar conditions of tenancy, the former foul, filthy, and *neglected*, the latter sweet, clean, and exhibiting palpable evidence that the tenants appreciate the comfort and cherish the advantage of properly flushed closets; and there are lots of other places where the same thing may be noticed. Among the Courts that show great improvement in this respect, I may mention Noah's Ark Yard, Kingman's Yard, Thorner's Yard, Woollett's Yard, The Close, and other Courts in Stone Street, most of which have been furnished with flush tanks, and in some cases, as for instance Thorner's yard, syphon flush apparatus.

Another very great improvement is that the huge open receptacles for house refuse have been swept away and small covered dustbins substituted; these are emptied with the greatest punctuality once or more times every week.

As regards the town scavenging, I consider it to be famously well done.

What a contrast between these things as they now are with what they were five-and-twenty years ago! Those only can fully appreciate the change who can recall the days when Bone Alley, the purlieus round about St. Faith's Green, and down by the river side flourished. Out of this change as will be seen in the sequel immense sanitary profit has accrued.

The work of the Sanitary Inspector, Mr. Jackling, is set forth in the following list of various "NUISANCES DEALT WITH BY STATUTORY NOTICE OR OTHERWISE":

Houses with drains, or reconstructed	198
Drains repaired and cleansed	325
Water Closets ditto	519
Houses provided with new Water Closets	75
Houses provided with additional Water Closets	6
Old Pan Closets with Container and D Traps removed	10
Water Closets provided with Water Supply and Flushing Apparatus	187
Soil Pipes removed outsides dwellings and ventilated	14
Slop Sink and other Waste Pipes disconnected from Drains	103
Trapped Stoneware Gullies provided, in lieu of defective Brick and Bell Traps	200
Houses provided with Ash-pits or Dust-bins	78
Houses provided with new shooting or repaired	45
Cesspools cleansed or filled up	13
New Cesspools constructed	12
House Refuse removed on complaint	6
New Privies constructed	5
Remove Water in Cellars	5
Construct or Repair Urinals	4
Remove Pigs	14
Overcrowding	13
Houses cleansed and lime-washed	5
Remove Manure	7
Remove Pigeons, Poultry and Animals	25
House Roofs repaired	50
Back Yards of Dwelling Houses provided with new Concrete Pavement	21 95
Manure Pits constructed	5
Old Drains Trapped from Sewer and ventilated	6
Miscellaneous, not under above heads	35
New Glazed Stoneware Pipe Drainage laid (6,895 feet)	
Houses Fumigated	197
Total	2278

There has been very little necessity for taking punitive action under either of the several Sanitary Statutes, the only occasion was one of overcrowding; in connection with this case the question arose, but was not finally entertained, whether the building in which the overcrowding took place, together with two adjacent buildings, should be dealt with under Sec. 38 of the Housing of the Working Classes Act as an "obstructive building." Naturally in an old town like Maidstone there are many places that might well be brought within the meaning of this Act; in point of fact it is more difficult to know where to stop than where to begin. One of the best Sanitary measures of the year relates to overcrowding, and it gives me great satisfaction to record your action in raising the legal minimum limit for air space in Common Lodging Houses from 240 to 300 cubic feet per head; this alteration of the Bye-laws, so long contended for, puts Maidstone in this respect on an equal footing with most other places.

DAIRIES, COWSHEDS AND MILKSHOPS ORDER, 1885: regular inspections and quarterly reports under this order have been made. By the most recent of these reports at the present time there are on the register, 112 persons; 20 as Cowkeepers and Purveyors, and 92 as Purveyors, but 10 of these latter produce their own milk outside of Maidstone, and are Purveyors in the town only. Three persons have had to be cautioned for not keeping their trade utensils clean, but no prosecution has been required to enforce obedience to the cautions of the Inspector.

FACTORY AND WORKSHOPS ACT.—Many inspections have been made, without any cause for complaint.

CANAL BOATS ACT.—Regular inspections have been made, and no offence requiring legal proceedings committed.

BAKEHOUSE REGULATION ACT.—Only one cause for complaint occurred during the year, that was for neglect of whitewashing the premises, which was immediately remedied without need for compulsion.

PUBLIC WATER SUPPLY.—The results of the periodical analyses of the four sources of the Public Water Supply are given in Table IV. Without exception the results of the analyses have been quite satisfactory, and it is to be remarked that whereas in times past our Conduit water always stood pre-eminent, now there is no longer much difference in point of purity between it and the Company's supply, the latter having attained practically to an equal excellence.

Of Water from Private Wells five samples have been submitted for analysis, and the results of the analyses were as follows:—

1894.	No.	Description.	Total Solids.	Loss on Ignition.	Chlorine.	Nitrogen as Nitrates.	Ammonia.		Oxygen absd. in		Hardness.		Appearance in 2-foot tube.
							Free.	Alb.	$\frac{1}{4}$ hr.	4 hrs.	Perm.	Total.	
May 17	1	Reservoir at Cobtree	32·3	1·9	1·3	·40	·04	·04	·027	·051	17·8	8·6	v. turb. gr.
June 11	2	Brunswick Street...	79·3	4·1	4·8	·40	·00	·05	·015	·035	31·4	19·0	cl. gr. very dirty.
July 1	3	13, Upper Stone St...	67·7	2·9	9·2	·60	·00	·15	·004	·028	20·9	9·4	cl. green
,, 1	4	35, Upper Stone St...	93·0	4·9	7·8	·65	·00	·15	·025	·039	31·9	20·3	cl. green.
,, 30	5	Willington Street...	25·7	3·0	1·4	·30	·18	·06	·006	·028	14·3	6·0	dirty grn.

Nos. 1 and 5 were reported as being good waters, No. 1, however, "showing excess of vegetable matter." No. 2, "from excess of some of its constituents, very risky." Nos. 3 and 4, "much polluted by filtration through sewage sodden soil."

Food and Drugs Act:—34 samples of Food have been submitted for analysis under the terms of this Act during the year; 1 of whiskey, 5 of butter, and 28 of milk. Eight of the milks were more or less adulterated, in two instances they were found to have been watered to the huge extent of 29 and 30 per cent. respectively, the proportion of the estimated adulteration being calculated upon an assumption that the original milk in each case was of the poorest quality; if a standard representing milk of an average quality had been taken for the basis of the calcutations the estimate of the added water would have come out much higher; in a third instance the added water was 11·6 per cent.; and in a fourth, not only had the milk been entirely deprived of its cream, which of course is its most valuable constituent, but it had also been watered to the extent of 18 or more per cent. The Butters in each case were genuine, and the single sample of whiskey was also genuine and of the legal standard strength.

ARTICLE.	RESULT OF ANALYSIS.
Butter	Pure.
Butter	,,
Butter	,,
Butter	,,
Butter	,,
Whiskey	,,
Milk	,,
Milk	,,
Milk	Small amount of added water.
Skim Milk	18·1 per cent. added water.
Milk	Pure.
Milk	11·6 per cent. added water.
Milk	Pure.
Milk	29 per cent. added water.
Milk	10 per cent. cream abstracted.
Skim Milk	Pure.
Milk	,,
Milk	,,
Milk	,,
Milk	Poor in cream.
Milk	Pure.
Milk	,,
Milk	,,
Milk	,,
Milk	Very poor in cream.
Milk	Pure.
Milk	,,
Milk	,,
Milk	,,
Milk	30 per cent. added water.
Milk	Pure.
Milk	,,
Milk	,,
Milk	,,
Total 34.	= 23·5 per cent. adulterated.

THE DEATH RATE.

Of late years, in my monthly and annual reports, I I have so repeatedly had occasion to record a remarkably low death rate that it has come to be an almost universal rule; consequently I have been led to look into the matter critically, with the object of ascertaining all that is to be discovered bearing upon the subject, and having done this I find the facts relating thereto so to abound in important and instructive interest, that I desire to place before you some of the results of these enquiries. In the first place, if I may presume to do so, allow me to bespeak your close attention to certain figures which are absolutely necessary for the elucidation of the subject; to many, as I very well know, statistics are repellent, consequently I will use them as sparingly as possible, I feel confident that those who favour me with their attention will, at the close of these remarks, have abundant reason for satisfaction.

At the outset, to make things all the more clear, it will be well to explain what I am going to show, and how I am going to proceed. I am going to show that there has been a most surprising diminution in the Death Rate in the country at large, and in our town of Maidstone in particular. This shall be done by contrasting the recent with the past records for England and Wales on the one hand, and Maidstone on the other, each by themselves and then by a comparison between the two, England and Wales being taken as a standard. In this way it shall be shown to what extent Maidstone has contributed to the reduction, and finally an endeavour shall be made to trace the progress, mode of incidence, and the causes of the vast improvement we shall find to have taken place.

Accurate detailed records of the deaths in Maidstone are available for 26 years only, that is to say for from as far back as 1870 to the present time; for this space I have the rates year by year for each quarter of the year, and these, together with similar data concerning England and Wales, are placed in the appendix for the purpose of reference and comparison. These two sets of figures constitute the basis of what follows:—

It will be convenient to commence with ENGLAND and WALES. Striking an *average* for the *26 years* mentioned, we find the death rate for the whole country to amount to 20·1 deaths per annum for each 1,000 of population.

Now the death rate for 1895 = 18·7, making a reduction as compared with the 26 years average of 8.6 per cent., or if we take the mean rate of the first five years, viz. 1870-74, which = 22·0, for comparison, then the reduction in 1895 equalled 15½ per cent.

It is only when we reflect upon what these facts really imply that the full significance of these figures is revealed to us; they mean that if the rate of mortality had prevailed during 1895 that did prevail five-and-twenty years ago, the deaths in England and Wales last year, instead of being 568,758, would have been 654,071, so that no fewer than 85,313 men, women, and children, say a population of two and half towns the size of Maidstone, survived, who would under the earlier state of affairs have been dead and buried. Astonishing as this statement is, except for a small correction necessitated by the concurrent reduction of the birth rate, the nature and operation of which will immediately be explained, it is absolutely correct. Though what has been said applies in the general way to Maidstone as well as all other places contributing to the population of England and Wales, most places taken separately, in varying degree of course, are found to differ, some widely, in their participation in the average result, not necessarily because the particular places are more or less healthy than the rest, but in some cases because the constitution of their respective populations differ from the average of England and Wales.

It is notorious that young children and old people have a much more precarious hold upon existence than persons at other ages. An illustration will make the effect of this clear. Imagine three towns, the first to include a population of 1,000 infants under one year, the second 1,000 of aged men and women over 75 years, and a third 1,000 of boys and girls between 10 and 15. Now experience shows that of 1,000 infants 178 would die in the course of the year, and of the old men and women 162 would die, but of the 1,000 girls and boys only three would die. So it is obvious that the death rate of a population must be largely influenced by the age of its individual inhabitants; besides which the prospects of living also vary with the sex, it follows therefore that before one place can be rightly put into comparison with another, or with the population at large, "*the age and sex constitutions*" of the two sets of people compared must be known and allowed for. As you are aware, this calculation has been made for Maidstone* upon the basis of the last census, so that in what follows when the term "corrected for age and sex" is used it is to be understood that the proper allowance upon the recorded figures has been made, so as to make the figures relating to Maidstone strictly comparable with those for the general population of England and Wales. Bearing upon this point there is also the the fact that during recent years there has been a falling off in the General Birth Rate of England and Wales from 35·3 to 30·3 per thousand, and consequently there must be a less proportion of infant children in the population now, than there was 25 years ago, and therefore the general death rate is accordingly reduced in proportion therewith. This is what was alluded to in the course of the remarks above upon the saving of life in England and Wales, exhibited by the 15½ per cent. reduction in the death rate of 1895, as compared with what it was between 1870-74. This qualification borne in mind, allow me to repeat the facts.

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* See my Annual Report for 1893, page 5.

The mean Death Rates in England and Wales were: for the 5 years 1870-74 22.0; for the 26 years 1870·95 20·1, = a reduction of 8·6 per cent.; for the year 1895 18·7, = a reduction of 15½ per cent., and the consequent saving of life in England and Wales for 1895 alone = 85,313 persons.

Let us now enquire what was Maidstone's contribution to this result. Dealing with the matter in precisely the same manner, and making the full allowance necessary for the "age and sex constitution" of the Maidstone population, the results are as follows:—

The mean Death Rates in Maidstone were; for the 5 years 1870-74 19·5; for the 26 years 1870-95 16·9, = a reduction of 13·3 per cent.; for the year 1895 15·0,=a reduction of 23·1 per cent., and a consequent saving of life in Maidstone during 1895 alone = 105 persons.

Compared with England and Wales we find Maid stone to stand as follows:—

During the 5 years 1870-74, Maidstone with a lower rate by 2·5 per thousand, = 11·4 per cent. reduction; the 26 years 1870-95, with a lower rate by 3·2 per thousand, = 15·9 per cent. reduction; and in the year 1895, with a lower rate by 3·7 per thousand, = 20 per cent. reduction upon England and Wales.

So it is seen that at the commencement of the period under review the Maidstone mortality was 11·4 per cent. below the average mortality of England and Wales, but that in the course of the 26 years the Maidstone rate has been still further reduced to 20 per cent. below. So far the facts and figures are comparatively simple, but to gain an insight into their deeper significance it is necessary they should be extended. When this is done two fresh facts are discovered; first we find that the reduction in the death rates is not spread equally over the whole year; and secondly, we observe that as between England and Wales on the one hand and Maidstone on the other the time incidence as regards the season of the year when the greatest reduction takes place varies. In the following Tables the year's records are broken up into four quarters, the March, June, September, and December quarters; the Table A refers to England and Wales, the Table B to Maidstone, and are strictly comparable. *See next page.*

From which we see, as regards England and Wales, the reduction takes place mainly during the second and fourth quarters; during the first there is no reduction, and, which is very important, there is only a *small reduction* during the *third* quarter. On the other hand as respects Maidstone we not only find a

A	England and Wales.—Showing reduction in the Death Rate in 1895, as compared with average of 26 years, 1870—1895.				
Quarter	I.	II.	III.	IV.	Year.
Average Rate in England and Wales for 26 years, 70-95	22·7	19·6	18·2	19·9	20·1
Rate for 1895	22·8	17·2	17·4	17·5	18·7
Reduced to per cent. of the 26 years' average	100·6	87·7	95·4	87·8	93·0
Saving of Life in per cent.	..	12·3	4·6	12·0	7·0

B	Maidstone.—Showing reduction in Death Rate in 1895, as compared with average of 26 years, 1870-1895.				
Quarter	I.	II.	III.	IV.	Year.
Maidstone, 26 years' average, 1870-1895	20·4	15·3	15·8	16·1	16·9
Rate for Maidstone, 1895	17·8	11·2	11·5	14·3	13·7
Reduced to per cent. of the 26 years' average	87·2	73·2	72·7	88·8	81·1
Saving of Life in per cent.	12·8	26·8	27·3	11·2	18·9

reduction, in all but the fourth quarter, larger than in the case of England and Wales, but we also find that the *main reduction* took place during the second and *third* quarters.

Next I want to show that the third quarter of the year was not always so healthful for Maidstone. The next two following Tables give the figures representing (C) the average of the rates for England and

Wales and Maidstone for the five first years of the period under review, 1870-74, and (D) those for 1895.

C Old Maidstone.	Death Rates, England and Wales and Maidstone, for the 5 years, 1870-1874, compared.				
Quarter	I.	II.	III.	IV.	Year.
England and Wales	24·1	21·1	20·8	22·2	22·0
Maidstone	21·5	17·9	20·6	18·0	19·5
Per cent. in comparison with England and Wales as standard....	89·2	84·8	99·0	81·7	88·6
Saving of Life in per cent.	11·8	15·2	1·0	18·9	11·4

D Modern Maidstone.	England and Wales and Maidstone (corrected) for 1895. Death Rates compared.				
Quarter........................	I.	II.	III.	IV.	Year.
England and Wales	22·8	17·2	17·4	17·5	18·7
Maidstone, corrected..............	19·4	12·2	12·6	15·6	15·0
Per cent. in comparison with England and Wales as Standard ..	85·0	70·9	72·4	89·1	80·2
Saving of Life in per cent.	15·0	29·1	27·6	10·9	19·8

So the comparative healthfulness of Maidstone at the beginning and ending of the period of 26 years is measured by the difference between 1 per cent. at the beginning and 27·6 at the ending, or a gain of no less than 26·6 per cent. As will be seen in the sequel there is reason to consider the lowness of the death rate for the third quarter to be the very touchstone of sanitary prosperity.

Our next business is to interpret, as far as may be, these astonishing changes. Speaking broadly, *the cause of a high death rate is Dirt.* Clean air, clean soil, clean water, clean food, these are the main things that keep a death rate low. It goes without saying that country districts are and ought to be more salubrious than town districts, for the reason that country people for the most part have cleaner air to breathe and more of it, cleaner soil to dwell upon and more of it, than town's folk, but although this is so usually, it is not everywhere, or at all times ; some country places by neglect of sanitary measures are made most unwholesome, in point of fact many villages at the present day are, and five-and-twenty years ago even large towns the size of Maidstone were, in a most benighted condition in all that relates to sanitary affairs. It was not until after the Public Health Act of 1875 became law that systematic efforts at sanitation came in vogue, since then, through such efforts, Maidstone has benefitted immensely, and has been raised from a position tending towards the condition of an unhealthy town district to that of a conspicuously healthy country district. Tables C and D show this, moreover, as we have learned to expect should be the case, Tables D and E show that this beneficial change is most strongly manifested during the second and third quarters, embracing the warmer months of the year.

This distinction between Town and Country is well worth looking into, and by what immediately follows it will be seen still more clearly, first how strongly Old Maidstone had developed *Town* characteristics, and secondly how thoroughly Modern Maidstone has been restored to *Country* attributes.

Of the thirty millions of people that inhabit England and Wales, twenty millions live in town districts and ten millions in country districts. In the next Table (E) these people are broken up into their respective sections for the purpose of exhibiting the points to which I have just referred. This Table gives a ten year's average 1885-94.—1, of England and Wales; 2, of Town Districts; 3, of Country Districts; 4, of five year's average for old Maidstone, 1870-74; and 5, Modern Maidstone during 1895.

E	Death Rates.—Comparison between Town and Country Districts.				
10 Year's Average, 1885-94.	I.	II.	III.	IV.	Year.
1 England and Wales—Population, 30,394,087.	21·7	18·5	16·7	18·6	18·9
2 Town Districts—Population, 20,550,953.	22·3	19·2	17·9	19·8	19·8
3 Country Districts—Population, 9,843,125.	20·8	17·3	14·5	16·7	17·3
4 Old Maidstone, 1870-74.	21·5	17·9	20·6	18·0	19·5
5 Modern Maidstone, 1895, corrected.	19·4	12·2	12·6	15·6	15·0
Saving of Life in per cent. in Modern Maidstone	9·8	31·7	38·8	13·0	23·1

With these figures before us it is impossible to escape from the conclusion that whereas Maidstone 25 years ago exhibited the qualities of an *unhealthy town district*, now, notwithstanding the increase of her population, presents the characteristics of a *healthy country district* to a most remarkable degree; this grand fact leads to the last point that I have to dwell upon.

I want now, so far as I am able to do so, to lay bare the *modus operandi*, so to speak of this glorious change. To prepare the way for this we must make a short digression. In the course of the above remarks I have said that dirt is the cause of excess of mortality, by dirt I mean more particularly dirt of a certain kind. In these latter days we have come to know that the most pernicious kind of dirt is not of the nature of soot or clay or any such like substances, but is constituted of microscopic living organisms that exist, not simply and passively as so much inert matter upon places whereon they may be mechanically and accidentally deposited, but like other living things actively possessed of all the endowments of life, and subject to all its casualties, on the one hand to increase and multiply, or on the other to perish in accordance with the suitability or unsuitability to their own nourishment and development of the substance and condition of the substance upon which they may chance to find a resting place. There are three essentials to their existence:—1, decaying animal or vegetable matter; 2, warmth; 3, moisture; these three essentials co-exist more commonly during the warm months. The mode of propagation of this sort of dirt is by means of germs of a similar nature to the kind of organic life that attends upon fermentation. In the ordinary course, all sorts of refuse organic matter are are attacked by fermentative organisms, and by their action brought to decay and rottenness, in that condition they give out poisonous products which are accountable for a large proportion of the disease and premature death to which mankind is liable. This is the secret of the mischief done by deposits of house refuse, foul closets, choked drains, ill-kept collections of animals, piggeries and the like, around and about dwellings, the presence of which load the soil with the organic refuse matter in which these death-dealing organisms find their natural abode, resting may be dormant until favorable conditions of heat and moisture arouse them into activity. In this we find the explanation of the special prevalence of diarrhœal disorders during the warmer seasons, for at that time the soil has attained its maximum annual temperature, and, in consequence of this circumstance, fermentation its maximum activity; moreover, this is the time for open doors and windows, which relatively makes more for country than town dwellers, the difference from a sanitary point of view between town and country is far less during the cold season with shut up houses than during summer with open houses; from which it follows that places having country attributes should exhibit these qualities more conspicuously during the warm season.

By this time the way is paved and the road is clear for our final deduction. We are seeking an explanation of the causes for the reduced death rate, and more especially for the reason of the reduction falling chiefly upon the warmer months. Without doubt a variety of circumstances contribute to this reduction as a whole, most of these are in continual and equal operation the year round, and consequently must effect a reduction alike at all seasons, but we have yet to find a reason for the reduction falling chiefly upon the warmer months. The answer is simple and satisfactory: in very large measure it is to be found in the difference between the sanitary condition of Modern as compared with Old Maidstone, and the effect warmth has upon the fermentation processes in the soil. To some people the very simplicity of this answer may be an obstacle in the way of its acceptance. Here and there an open dust bin, a choked house drain, or a dirty pig-stye, is so much a matter of course from the popular point of view, that no particular importance is attached to it; yet I beg of you not to be led away from the demonstrated truth that attention to, or neglect of, these apparently trivial matters makes *all the difference* between wholesome or unwholesome environment, and that this in turn determines the balance between health and disease, and often betwixt life and death. A few moments reflection will make this plain.

Unsanitary agents such as we are dealing with work their effect by depressing vitality, making the strong less strong and the weak more weak, so that in any given case it is merely a question of what reserve of vitality there may be, whether the person is or is not able successfully to contend against the depression wrought by the unsanitary agent, if not, then invasion by disease or destruction by death ensues, and of course in a large population like our own there are we may be sure some of all sorts, men, women, and children, some sick, some sound, some strong, some weak; and we may be also sure that whatever the present strength of any one individual in particular may be, the time must come sooner or later, to each and every one in turn, to hold existence on a precarious tenure, for besides the frailty of infancy and old age, which even under the most favorable circumstances all must face, there are many in the prime of life who have to run the gauntlet of crises, so that there is never lack of scope for the fatal operation of insanitary agents.

If it shall appear that I have given too exclusive prominence to measures relating to the cleansing of the soil, and the removal of the effete products of social life, it has not been with a wish to ignore other important considerations, for instance the maintenance of the purity of food and water, the control of contagion, and the still more hurtful because more widely prevailing evil, overcrowding; all these and other things have contributed their share in the general result, but on the present occasion we are less concerned in the discussion of the action of sanitation as a whole upon the reduction of the mortality as we are in the search for the explanation of the special reduction that we have found to occur at certain times of the year under favorable circumstances; this, to my mind, without doubt is due to the maintenance of a clean and wholesome condition of the surface of our streets, and the precincts of our dwellings, the direct outcome of the sanitary expedients and precautions devised and executed by the Sanitary Authority; consequently in a report of this kind, addressed to the Sanitary Administrators of the town, it must be my especial duty to emphasise a point of such eminently practical bearing, for while it furnishes direct and tangible evidence of the necessity for these expedients and precautions, at the same time it justifies the expenditure incurred thereon.

Five-and-twenty years ago, no attempt was made to preserve the soil from pollution; privy middens, cesspools, filthy accumulations of house refuse, "sewers of deposit," untended roads and pavements, neglected courts and alleys, abounded everywhere; no wonder that disease-producing and death-dealing organisms flourished, and that the death rate during the summer quarter was nearly 40 per cent. more than it is now. As we well know a complete change in all these things has taken place; well drained, well scavenged, well looked after in every respect, modern Maidstone has responded bounteously to the efforts that have been put forth for her redemption.

With this my task is ended; I only hope that I have been a successful exponent of what everyone must admit is a splendid achievement.

I have the honour to be,
Mr. Mayor and Gentlemen,
Your obedient servant,
MATTHEW A. ADAMS,
Medical Officer of Health.

Trinity House, Maidstone.
March, 1896.

Deaths Rates per 1,000 per annum, as recorded.

ENGLAND AND WALES.

Year.	First Quarter.	Second Quarter.	Third Quarter.	Fourth Quarter.	Whole Year.
1870	26·0	21·6	22·0	22·3	22·97
1871	24·7	21·3	21·1	23·4	22·62
1872	23·5	21·0	20·5	20·2	21·30
1873	23·0	20·4	19·5	21·5	21·10
1874	23·4	21·0	20·8	23·8	22·25
1875	27·5	21·9	20·1	21·8	22·82
1876	23·5	20·9	19·6	19·9	20·97
1877	22·3	21·5	17·7	20·1	20·40
1878	22·8	20·8	20·6	22·6	21·70
1879	25·2	21·1	16·4	21·4	21·02
1880	22·7	19·6	20·2	19·5	20·50
1881	21·5	18·6	16·8	18·7	18·90
1882	21·5	19·0	17·8	20·0	19·62
1883	22·2	20·0	16·8	19·2	19·55
1884	19·7	19·1	19·9	20·0	19·67
1885	22·0	19·5	16·7	18·7	19·22
1886	23·1	18·3	18·1	18·7	19·55
1887	20·9	18·5	17·9	19·1	19·10
1888	21·4	17·8	15·2	18·1	18·12
1889	19·9	17·5	17·1	18·4	18·22
1890	23·3	17·9	16·9	20·1	19·55
1891	22·0	23·7	15·9	19·3	20·22
1892	24·9	18·0	15·7	17·4	19·00
1893	19·7	18·0	19·2	19·9	19·20
1894	20·0	15·8	14·2	16·4	16·60
1895	22·8	17·2	17·4	17·5	18·72
Average for the 26 years.	22·67	19·61	18·23	19·92	20·11
5 year's mean 1870-74.	24·12	21·06	20·78	22·24	22·05

MAIDSTONE.

Year.	First Quarter.	Second Quarter.	Third Quarter.	Fourth Quarter.	Whole Year.
1870	20·0	18·4	27·1	20·4	21·47
1871	23·3	20·2	19·8	17·3	20·15
1872	21·6	16·4	16·5	17·3	17·95
1873	19·5	17·5	18·7	15·9	17·90
1874	23·2	17·2	21·2	19·2	20·20
1875	22·6	20·4	17·9	17·3	19·55
1876	24·9	15·2	16·6	16·8	18·37
1877	26·3	18·4	15·6	14·5	18·70
1878	19·2	17·8	16·7	19·7	18·35
1879	23·2	20·2	14·6	20·6	19·62
1880	23·4	17·3	20·0	15·0	18·94
1881	17·7	13·2	14·1	11·4	14·13
1882	17·5	15·3	15·8	20·6	17·31
1883	27·6	18·1	14·2	14·2	18·52
1884	16·2	14·0	15·9	16·5	15·69
1885	18·2	12·7	14·7	18·2	15·95
1886	23·4	13·8	17·0	15·9	17·55
1887	15·1	8·5	12·6	12·9	12·31
1888	17·5	12·4	14·3	13·3	14·42
1889	15·7	13·3	13·0	12·8	13·72
1890	15·4	14·8	10·1	14·9	13·83
1891	20·6	13·6	13·9	18·6	16·70
1892	23.7	13·5	13·4	15·6	16·59
1893	15·6	12·4	15·4	14·0	14·38
1894	21·0	13·4	10·3	10·9	13·93
1895	17·8	11·1	11·5	14·3	13·69
Mean of 26 years.	20·4	15·3	15·8	16·1	16·92
5 year's mean 1870-74.	21·5	17·9	20·6	18·0	19·53

BOROUGH OF MAIDSTONE, 1895.

TABLE I.

AREA. The area is 4,008 acres, divided into two divisions, East and West, by Week Street, Gabriel's Hill, and Stone Street; all to the West, including the Western sides of those Streets, constituting West Maidstone; the East side, East Maidstone.

The Area of { East Maidstone .... 2,019 acres.
West ,, ... 1,989 ,,

ELEVATION. The population reside at a mean Elevation of 70 feet above the sea level, ranging from 20 to 120.

HOUSES. At the census of 1891 there were { West 2,693 / East 3,314 } =6,007 inhabited houses, containing on an average { West 5·8 / East 5·0 } =Whole Borough 5·37 persons to a house.

ANNUAL RATEABLE VALUE of Property in the Borough for the Poor Rate is £133,801.

DENSITY (1895) { East.................. 8·44 persons per acre.
West .. .. 8·16 ,, ,,

POPULATION, estimated to the middle of 1895 } Total 33,282 { East Maidstone............ 17,051.
West ,, ... 16,231.

					Legitimate.	Illegitimate.
BIRTHS.	Males.... 429	Total....830	East Maidstone	 428	 419	 9
	Females.. 401		West ,,	 402	 382	 20

Annual Rate of Births per 1,000....East Maidstone 25·09....West Maidstone 24·76 ....Whole Borough 24·93.

DEATHS. { Males.... 224 / Females.. 232 } Total....456 { East Maidstone .... 248 / West ,, ... 208 } Whole Borough..456.

Annual Rate of Mortality per 1,000 .. East Maidstone 14·54 .. West Maidstone 12·81 .. Whole Borough 13·69.

Excess of Births over Deaths, East Maidstone 180, West Maidstone 194, Whole Borough 374.

TABLE II.

Deaths at different ages, at rate per 10,000 per annum.

PERIOD.	District.	Under 1 year.	1 to 5 years.	5 ,, 15 ,,	15 ,, 25 ,,	25 ,, 35 ,,	35 ,, 45 ,,	45 ,, 55 ,,	55 ,, 65 ,,	65 ,, 75 ,,	75 ,, 85 ,,	85 and above.	TOTAL.
1st Quarter..	E	39·8	25·8	7·0	9·4	9·4	9·4	16·4	21·1	16·4	32·8	11·7	199·3
,, ..	W	29·5	9·8	4·9	7·4	4·9	7·4	17·2	7·4	32·0	34·5	..	155·2
2nd Quarter..	E	18·7	..	4·7	11·7	2·3	9·4	16·4	18·7	23·4	16·4	2·3	124·2
,, ..	W	14·7	4·9	7·4	9·8	4·9	9·8	4·9	17·2	12·3	9·8	2·4	98·5
3rd Quarter..	E	53·9	11·7	4·7	2·3	9·4	4·7	7·0	7·0	4·7	9·4	2·3	117·2
,, ..	W	36·9	14·7	..	4·9	17.2	9·8	4·9	4·9	14·7	2·4	2·4	113·3
4th Quarter..	E	25·8	18·7	4·7	4·7	11·7	4·7	14·0	21·1	18·7	9·4	7·0	140·7
,, ..	W	36·9	19·7	9·8	4·9	2·4	19·7	2·4	12·3	24·6	9·8	2·4	145·3
Whole Year..	E	35·1	14·0	5·2	7·0	8·2	7·0	13·5	17.0	15·8	17·0	5·8	145·4
,, ..	W	29·5	12·3	5·5	6·7	7·4	11·7	7·4	10·4	20·9	14·1	1·8	128·1

Average length of life in East and West Maidstone for each of the four quarters.

EAST MAIDSTONE.

Deaths.		Years.
1st Quarter....	85	38·77
2nd ,, ...	53	46·55
3rd ,, ...	50	23·19
4th ,, ...	60	38·39
Whole Year	**248**	37·20

Giving an average age for each individual of

WEST MAIDSTONE.

Deaths.		Years.
1st Quarter....	63	44·49
2nd ,, ...	40	40·05
3rd ,, ...	46	29·23
4th ,, ...	59	31·80
Whole Year	**208**	36 66

Giving an average age for each individual of

Average age attained at Death, during the whole year for the Borough at large = 36·95.

TABLE III.

Causes of Death, 1895, showing Rate per 1,000 per Annum for each District.

Period.	District.	Seven Zymotic Diseases.	Other Zymotics.	Phthisis.	Other Constitutional Diseases.	Diseases of the Respiratory Organs.	Diseases of the Organs of Circulation.	Other Local Diseases.	Developmental Diseases.	Deaths by Violence.	Causes ill-defined or not specified.	Total from all Causes.
First Quarter	East Maidstone ..	·46	..	1·40	2·11	5·62	1·64	3·75	2·81	·93	1·17	19·93
	West ,, ..	..	..	1·72	1·97	4·43	1·72	3·94	1·47	·24	..	15·52
Second ,, ...	East ,, ..	·23	..	1·40	·93	3·28	1·40	2·81	1·17	·23	·93	12·42
	West ,, ..	..	..	·98	1·23	1·72	·73	2·46	·49	1·47	·73	9·85
Third ,, ...	East ,, ..	·47	2·34	·93	·93	·93	·47	3·28	·93	..	1·40	11·72
	West ,, ..	..	1·47	·49	·73	·24	1·72	3·44	·73	·73	1·72	11·33
Fourth ,, ...	East ,, ..	·93	·23	2·57	·47	2·57	1·17	3·75	1·40	·23	·70	14·07
	West ,, ..	1·23	1·23	·49	·73	2·71	1·23	4·43	·98	·98	·49	14·53
Whole Year	East ,, ..	·52	·64	1·58	1·11	3·10	1·17	3·40	1·58	·35	1·05	14·54
	West ,, ..	·30	·67	·92	1·17	2·27	1·35	3·57	·92	·86	·73	12·81

N.B.—Zymotic Diseases include Small Pox, Measles, Diphtheria, Whooping Cough, Fevers, &c. Constitutional Diseases include Gout, Cancer, Scrofula, &c. Developmental Diseases include Premature Birth, Teething, Old Age, Atrophy, and Debility, &c.

TABLE IV.

Analyses of the Public Water Supplies, 1895.

Month.	Total Solids.	Loss on Ignition.	Chlorine.	Nitrogen as Nitrates.	Ammonia.		Oxygen Absorbed in		Hardness.		Appearance in 2-foot tube.
					Free.	Alb.	$\frac{1}{4}$-hour.	4 hours.	Total.	Perm.	
WATER COMPANY.—FARLEIGH WATER.											
January 10th..........	31·5	1·0	2·3	·40	·00	·03	·013	·015	16·7	7·5	clear green.
April 5th	32·0	1·7	2·2	·42	·00	·02	·008	·020	16·5	7·0	clear green.
June 29th	34·1	1·7	2·2	·54	·01	·02	·005	·017	18·7	7·8	clear greenish blue
October 19th	32·5	0·9	2·2	·57	·02	·02	·003	·010	16·7	7·8	clear bluish green.
WATER COMPANY.—BOARLEY WATER.											
January 10th..........	21·7	1·6	1·4	·37	·01	·02	·009	·013	14·3	4·9	clear bluish green.
April 5th	22·4	1·0	1·3	·38	·00	·02	·006	·013	14·2	4·7	clear bluish green.
June 29th	22·0	2·0	1·4	·40	·00	·04	·006	·016	13·4	4·3	clear greenish blue.
October 19th	19·2	1·2	1·4	·40	·01	·02	·006	·010	14·3	5·6	clear bluish green.
WATER COMPANY.—COSSINGTON WATER.											
January 10th..........	19·4	1·0	1·2	·37	·00	·02	·009	·011	12·9	4·1	clear bluish green.
April 5th	19·9	0·6	1·3	·35	·00	·02	·006	·014	12·8	4·2	clear bluish green.
June 28th	22·2	1·2	1·3	·36	·00	·05	·005	·012	12·7	4·8	clear greenish blue.
October 19th	22·5	2·3	1·3	·40	·01	·02	·003	·006	12·7	4·0	clear bluish green.
PUBLIC CONDUIT.											
January 10th..........	33·1	1·8	2·2	·40	·00	·02	·007	·009	16·2	6·7	clear green.
April 5th	30·1	1·9	2·3	·45	·00	·02	·008	·018	17·0	8·4	clear green.
June 28th	30·1	1·5	2·3	·50	·01	·04	·006	·012	17·4	7·1	clear greenish blue.
October 19th	33·0	1·4	2·0	·57	·02	·03	·003	·006	16·7	6·5	clear bluish green.

TABLE V.

RAINFALL IN MAIDSTONE, 1895. and excess or deficiency of Temperature.

FIRST QUARTER.				SECOND QUARTER.				THIRD QUARTER.				FOURTH QUARTER.			
Week.	Total Rain in inches.	No. of Days on which Rain fell.	Temperature.	Week.	Total Rain in inches.	No. of Days on which Rain fell.	Temperature.	Week.	Total Rain in inches.	No. of Days on which Rain fell.	Temperature.	Week.	Total Rain in inches.	No. of Days on which Rain fell.	Temperature.
1st	·07	1	−4·2	14th	·40	2	−4·0	27th	..	..	0	40th	·40	3	+2·7
2nd	·15	1	−8·2	15th	..	..	+2·0	28th	·13	1	+3·3	41st	1·79	5	−1·0
3rd	·89	4	+2·0	16th	·02	1	+1·5	29th	·36	2	−0·2	42nd	·04	1	−0·4
4th	1·28	5	−2·9	17th	·99	5	+2·4	30th	1·43	4	0	43rd	·47	2	−7·8
5th	·70	2	−12·7	18th	..	..	+2·0	31st	·91	2	−3·3	44th	·29	3	−7·0
6th	·50	1	−17·0	19th	..	..	+6·3	32nd	·81	4	−2·1	45th	2·16	6	+5·5
7th	..	..	−12·9	20th	·05	1	+3·1	33rd	·82	3	−0·5	46th	1·63	5	+7·5
8th	..	..	−5·7	21st	..	..	−2·6	34th	..	..	+5·0	47th	·25	3	+3·3
9th	·05	1	−3·9	22nd	..	..	+4·6	35th	·12	2	+1·3	48th	·80	4	+1·9
10th	..	..	−4·4	23rd	·07	1	+2·5	36th	·45	1	+5·8	49th	·07	3	+3·3
11th	·43	1	+2·7	24th	..	..	+0·1	37th	·16	1	+2·5	50th	·38	3	−0·6
12th	·25	3	+6·8	25th	..	..	+0·8	38th	..	..	+0·1	51st	1·65	3	−0·9
13th	·62	4	+1·3	26th	·03	1	+4·6	39th	..	..	+10·5	52nd	·62	2	−3·7
Total 4·94 inches.				Total 1·56 inches.				Total 5·19 inches.				Total 10·55 inches.			
				Total Rain in 1895=22·24.											

(A) TABLE OF DEATHS during the Year 1895, in the Urban Sanitary District of Maidstone, classified according to Diseases, Ages, and Localities.

	Mortality from all causes, at subjoined Ages.								Mortality from subjoined causes, distinguishing Deaths of Children under Five Years of Age.				Fevers.																	
(a.)	At all ages. (b.)	Under 1 year. (c.)	1 and under 5 (d.)	5 and under 15 (e.)	15 and under 25 (f.)	25 and under 65 (g.)	65 and upwards. (h.)	(i.)	Smallpox. 1.	Scarlatina. 2.	Diphtheria. 3.	Membranous Croup. 4.	Typhus. 5.	Enteric or Typhoid. 6.	Continued. 7.	Relapsing. 8.	Puerperal. 9.	Cholera. 10.	Erysipelas. 11.	Measles. 12.	Whooping Cough. 13.	Diarrhœa and Dysentery. 14.	Rheumatic Fever. 15.	Phthisis. 16.	Bronchitis, Pneumonia, and Pleurisy. 17.	Heart Disease. 18.	19.	Injuries. 20.	All other Diseases. 21.	Total. 22.
EAST MAIDSTONE .. ACRES. Area 2019.—Males........	119	29	12	3	6	36	33	Under 5			4									1		4		1	7			1	23	41
								5 upwds.						1					1					12	17	7		4	36	78
Females	129	30	12	6	6	42	33	Under 5			1											6			8				27	42
								5 upwds.			1			1			1						2	14	16	11		2	39	87
Including Deaths in West Kent Hospital as follows M.	10		2	1	2	4	1	Under 5																					3	3
F.	6	1		1	1	3		5 upwds.						1											1	2		2	7	13
Total	248																													
WEST MAIDSTONE.. ACRES. Area 1989.—Males........	105	24	7	6	7	32	29	Under 5			1									2		3			4				21	31
								5 upwds.			2												1	6	14	9		10	32	74
Females	103	24	13	3	4	27	32	Under 5														7			6	1		2	21	37
								5 upwds.																8	11	11		2	34	66
Including deaths in Kent County Lunatic Asylum as follows.................... M.	1					1		Under 5																						
F.	2					2		5 upwds.																1	1				1	3
Total	208																													
Totals	456	107	44	18	23	137	127	Under 5			6									3		20		1	25	1		3	92	151
								5 upwds.			3			2			1		1				3	40	58	38		18	141	305

The subjoined numbers have also to be taken into account in judging of the above records of mortality.

	(b.)	(c.)	(d.)	(e.)	(f.)	(g.)	(h.)	(i.)	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.
Deaths occurring outside the district among persons belonging thereto.	46	3		2	1	19	21	Under 5																	2				1	3
								5 upwds.																3	5	7		1	27	43
Deaths occurring within the district among persons not belonging thereto.	165	1	5	7	10	104	38	Under 5																	1			3	2	6
								5 upwds.														2		27	9	30		9	82	159

(B) TABLE OF POPULATION, BIRTHS, AND OF NEW CASES OF INFECTIOUS SICKNESS coming to the knowledge of the Medical Officer of Health, during the year 1895, in the Urban Sanitary District of Maidstone; classified according to Diseases, Ages, and Localities.

	Population at all Ages.				New Cases of Sickness in each Locality, coming to the knowledge of the Medical Officer of Health.				Fevers.									Number of such Cases removed from their Homes in the several Localities for Treatment in Isolation Hospital.				Fevers.								
(a.)	Census 1891. (b.)	Estimated to middle of 1895. (c.)	Registered Births (d.)	Aged under 5 or over 5 (e.)	Smallpox. 1.	Scarlatina. 2.	Diphtheria 3.	Membranous Croup. 4.	Typhus. 5.	Enteric or Typhoid. 6.	Continued. 7.	Relapsing. 8.	Puerperal. 9.	Cholera. 10.	Erysipelas. 11.	12.	13.	Smallpox. 1.	Scarlatina. 2.	Diphtheria. 3.	Membranous Croup. 4.	Typhus. 5.	Enteric or Typhoid. 6.	Continued. 7.	Relapsing. 8.	Puerperal. 9.	Cholera. 10.	Erysipelas. 11.	12.	13.
EAST MAIDSTONE ..	16,548	17,051	428	Under 5		7	11	1		1									3	3										
				5 upwds.		30	35			11			2		14				12	13										
WEST MAIDSTONE..	15,597	16,231	402	Under 5		8	5	2											5	2										
				5 upwds.		25	15	2		7					2				27	4			1							
Totals	32,145	33,282	830	Under 5		15	16	3		1									8	5										
				5 upwds.		55	50	2		18			2		16				39	17			1							